DOCUMENT RESUME

ED 090 467 CG 008 859

AUTHOR Vivekananthan, Pathe S.; Weber, Larry J.
TITLE Job Clusters as Perceived by High School Students.
PUB DATE Apr 74
NOTE 13p.; Paper presented at the Annual Meeting of the American Educational Research Association (59th Chicago, Illinois, April 1974)

EDRS PRICE MF-$0.75 HC-$1.50 PLUS POSTAGE
DESCRIPTORS *Career Choice; *Career Education; High School Students; Jobs; *Occupational Choice; *Occupational Clusters; Speeches; *Vocational Counseling; Vocational Interests

ABSTRACT

Career awareness is described as the manner by which students cluster jobs. The clustering of jobs was based on the students perceptions of similarities among job titles. Interest inventories were used as the bases to select 36 job titles. Seventy-eight high school students sorted the stimuli into several categories. The multidimensional scaling technique was used to analyze the data. Twelve clusters emerged using the criteria set by the authors. The findings suggest that the students' perceptions of the jobs may vary from that of inventory designers. The counselors should be made aware of this problem. Implications of the findings for other components of career education are discussed. (Author)

21.17

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

JOB CLUSTERS AS PERCEIVED BY HIGH SCHOOL STUDENTS*

Pathe S. Vivekananthan
Larry J. Weber
Virginia Polytechnic Institute and State University

ED 090467

A basic assumption in a career choice model is that job selection is a matching process whereby a person looks at his own attributes, weighs what he thinks the requirements of the job are and makes his decision. (See, for example, Vroom, 1964). The intent of vocational counseling is to facilitate this decision making process. During such counseling the process of assisting students in job selection is very often based on information obtained from the responses made by students to the items on an interest inventory Since an inventory is based on an underlying rationale of its designer's perception of the structure of occupations, the student is forced to make his decisions on a rationale that may not be in accord with his own viewpoint. Thus there exists a possibility that the inventory may not reveal the student's true perception of job clusters. To the extent that there is disagreement between the job perceptions of the instrument designer and those of students the possibility of inappropriate vocational choice exists. The purpose of the current research was to investigate the perceptions of jobs that students have. Such a determination is seen as necessary prior to making a realistic choice about what occupation a person should enter. Job awareness then is viewed as a precursor to job selection.

Career education has identified four major areas of emphasis, i.e., awareness orientation, exploration and training. To date the elementary school has focused on the awareness component. However, many researchers in the field of vocational development and vocational maturity would argue that career awareness is a continuous process in one's life. This paper is concerned with career awareness at the high school level.

Job awareness is described in this study as the manner by which students cluster jobs. For the purposes of this study, the clustering of jobs was based on the students' perceptions of similarities among job titles. Specifically, the authors were interested in determining (a) the jobs that high school students identified as similar (namely the job clusters), and (b) the nature of the clusters.

Job Clustering Approaches

A literature survey indicates that the methods used to classify jobs into clusters can be grouped under three categories. The first category deals with the job analysis technique. In their study, Riccobono and Cunningham (1971a, 1971b) identified work dimensions based on commonality of work elements of the jobs. The second category involves using the subjects' interests. For example, Cole, Whitney and Holland (1971) used S's scores on Vocational Preference Inventory to group jobs; Meir (1973) used the S's likableness score for jobs to group 72 jobs under 24 clusters. The third category of clustering uses perceptions by subjects

CG 008 859

---

*Paper presented at the 1974 American Educational Research Association Annual Meeting in Chicago, Illinois.

of similarities among jobs. Gonyea (1961, 1963) collected indices of job similarities and used factor analysis methods to group jobs. Since the purpose of the present study was to determine job clusters based on the perception of similarities among jobs, the third approach appeared most suitable.

The authors of the present study were interested in obtaining the spatial configuration of jobs. Spatial configuration helps to visualize the relationships between the jobs. Since the classic method of factor analysis does not make provision to plot the stimuli in a spatial configuration, multidimensional scaling techniques were explored.

METHODOLOGY

Job Titles:

Thirty-six job titles were selected in accordance with two criteria: (1) a job title must appear in three of four major interest inventories, or (2) a title must have been used in two job cluster studies by Gonyea (1961, 1963). The four interest inventories that were used to select job titles were Stong (Strong, 1966; Campbell, 1969), Kuder (Kuder, 1960), Gordon (Gordon, 1963), and Brainard (Brainard and Brainard, 1956). The 36 job titles are listed in Table 1.

Subjects:

A total of 78 students served as Ss. They were either juniors or seniors in high school enrolled in the summer school term.

Procedure:

The sorting procedure used by Rosenberg, Nelson, and Vivekananthan (1968) was used in this study. The procedure required the Ss to sort the stimuli into several piles. Specifically, each job title was typed on a 3" by 5" card. Each S was given an envelope containing 36 cards. The order of cards was different for each S. The envelope also contained rubber bands and a sheet of paper containing the following instructions:

> We are interested in finding out which jobs you think are similar and which jobs you think do not have very much in common. Your task is to put the jobs which go together in the same category. You will do this by looking at the job name on the cards provided and sorting them into piles of jobs that are alike. You may use as many categories as you wish, but try to limit the number of categories to 10. You may use one additional category, MISCELLANEOUS, for jobs which do not fit into the other categories. If possible, try to avoid the use of the miscellaneous category. When you have finished, place rubber bands around each set of jobs. Note which set is the miscellaneous category by marking in pencil MI on the top card of the miscellaneous category; and put another rubber band around all of them. Turn the cards into the monitor.

Data Preparation

Certain data preparation was necessary to use the multidimensional scaling method. It involved two steps. In the first step, an unadjusted 36 (jobs) X 36 (jobs) disagreement matrix was constructed. The value for an element in the

matrix was the number of Ss who did not put the two jobs together. For example, if the value of the element for sales clerk and secretary is 49, it indicates that 49 Ss put the two job titles in different piles. In the present study the highest value an element in the matrix can have is 78 and the minimum value is zero. Then the elements in the unadjusted matrix are divided by 78 to obtain the adjusted disagreement matrix.

In the second step, the adjusted disagreement matrix was used to obtain a disassociation matrix. Each element (δ_{ij}) in the disassociation matrix was computed following the method described by Rosenberg, Nelson and Vivekananthan (1968, pp. 286). Each (δ_{ij}) was then divided by the highest (δ) value in the matrix. This adjustment was necessary to use a multidimensional scaling program developed by Young (1968).

RESULTS

Cluster Identification

Solutions were obtained for each of the first five dimensions. A measure of the goodness of fit, termed "stress" was calculated for each solution and was expressed as a percentage (see Kruskal, 1964). Kruskal suggests that a stress of 5% is "good," and 10% is "fair."

The stress values for each solution is given in Table 2. The stress values indicate that the three dimensional solution falls within the fair to good range, while the four and five dimensional solutions can be considered "good."

In this study a combination of the three and four dimensional solutions were used as a basis for identifying the job titles that should be included in specific clusters. The values for the 3 and 4 dimensional solutions are given in Table 3. Using values for the three dimensional solution a 3-dimensional model was constructed with a plywood board and straws. By visually observing the job titles in the three dimensional display, the authors temporarily grouped the jobs in several clusters. Then distances between the job titles in four dimensional space were computed and used to validate the closeness between job titles in the clusters. The distance matrix is included in Table 4. From these procedures, two criteria were established to form the clusters identified in this study. (1) At least three job titles must be present in a cluster, and (2) the distance between each pair of jobs in a cluster must not have exceeded a .4 value. Following the two criteria, 32 job titles formed into twelve clusters and four job titles did not cluster. The job clusters are given in Table 5.

Naming Job Clusters

The naming of job clusters was a subjective matter. The procedure was to inspect the job titles within a cluster and assign a cluster title which best described the jobs. For example, the first cluster contains five job titles, namely, practical nurse, physician, dentist, chemist and medical lab technician. It appears that four jobs refer directly to the medical profession. The fifth, chemist, may not be thought to be directly related to the medical profession, but, upon reflection, it is conceivable that chemistry can be construed to be a part of the medical field (e.g., drug research, pharmacology) and it is understandable why it clustered. Therefore, the cluster was labeled Health Related.

Two clusters for business were identified. (Refer to Table 5) Several jobs were common to both clusters. However the job, secretary, did not meet the criteria for inclusion in cluster II nor did the jobs, sales clerk and store manager meet the criteria for cluster III. Inspection of the job titles suggested that the former list might best be described as sales or distributive work. Therefore, the cluster title Business-Distribution was given. Inspection of jobs in cluster III indicated that it might best be titled Business-Office.

Clusters IV and V, i.e., Mechanical and Building Trades, are self-evident; however, Clusters VI, VII and VIII provided a difficulty. Five jobs formed three clusters of three jobs each which indicates considerable overlap among clusters. Pattern maker, for example, is included in all three. It appears that the five jobs refer to some sort of ability to apply skills in a functional manner. However, the criteria the authors used did not permit the inclusion of all five jobs in a single cluster. Therefore the clusters were titled Applied Art I, Applied Art II, and Applied Art III.

Clusters IX and X present a situation similar to the one for the Business Clusters. There was overlap for two jobs, i.e., author and music teacher. However the other jobs in Cluster IX seemed to relate to a unique artistic expression of behavior; therefore, the cluster was called Creative Art. Cluster X contained three jobs whose content suggested the title Literary Art.

Two clusters (X1 and X2) were so named because the authors could not meaningfully interpret their content. Cluster X1 contained three job titles, namely farm hand, cook, and radio operator. Cluster X2 contained farm hand, cook, and surveyor. Four of the 36 job titles, namely demonstrator, lawyer, social worker and personal counselor, failed to cluster.

CONCLUSIONS

A primary concern of the current study was the appropriateness of interest inventories for vocational counseling purposes because of the incongruence of the inventory designers' and students' perceptions. Results were analyzed to ascertain if the jobs used in this study were categorized in similar fashion by the authors of the four interest inventories and by the two studies of Gonyea.

Problems were encountered in analyzing parallelism between the present findings with the interest inventories and Gonyea's results. The problems were due to (1) the number of categories used by an inventory or Gonyea's findings, and (2) the number of jobs that overlapped between the present study and in an inventory or in the studies by Gonyea. The authors are currently engaged in further analysis of the data since it is a part of a wider study involving career education. A preliminary analysis indicates that the findings in the present study are reasonably consistent with the categories used by inventory designers and with Goynea's study. For example, the Business-Distribution cluster identified in this study is well described by the Kuder persuasive category, the Gordon business category, and the Brainard commercial category. It is also similar to Gonyea's factor B and A respectively in his 1961 and 1963 studies.

Finally, while additional work is being done on the study and conclusions are tentative, it appears that the multidimensional scaling approach may be a worthwhile device for investigating clusters based on the perception of similarities among stimuli.

REFERENCES

Brainard, P. P. and Brainard, R.T. Brainard Occupational Preference Inventory: Manual. New York: The Psychological Corporation, 1956.

Campbell, D. Strong Vocational Interest Blank: Manual, 1969 Supplement. Stanford: Stanford University Press, 1969.

Cole, N. S. , D. R. Whitney, and J. L. Holland. "A Spatial Configuration of Occupations." Journal of Vocational Behavior, 1, 1-9, 1971.

Gordon, L. V. Gordon Occupational Check List: Manual. New York: Harcourt, Brace and World, 1963.

Gonyea, G. C. "Dimensions of Job Perceptions." Journal of Counseling Psychology, 8, 305-313, 1961.

Gonyea, G. C. and C. E. Lunneborg. "A Factor Analytic Study of Perceived Occupational Similarity." Journal of Applied Psychology, 47, 166-172, 1963.

Kruskal, J. B. "Nonmetric Multidimensional Scaling: II." Psychometrika, 29, 115-129, 1964.

Kuder, F. C. Kuder Preference Record: Manual. Chicago: Science Research Associates, 1960.

Weir, E. I. "The Structure of Occupations by Interests, A Smallest Space Analysis." Journal of Vocational Behavior, 3, 21-31, 1973.

Riccobono, J. A. and J. W. Cunningham. Work Dimensions Derived Through Systematic Job Analysis: A Study of the Occupational Analysis Inventory. Center Research Monograph No. 8, North Carolina State University, 1971. (a)

Riccobono, J. A. and J. W. Cunningham. Work Dimensions Derived Through Systematic Job Analysis: A Replicated Study of the Occupational Analysis Inventory. Center Research Monograph No. 8, North Carolina State University, 1971.

Rosenberg, S., C. Nelson, and P. S. Vivekananthan. "A Multidimensional Approach to the Structure of Personality Impressions." Journal of Personality and Social Psychology, 9, 283-294, 1968.

Strong, E. K. Strong Vocational Interest Blank: Manual. Stanford: Stanford University Press, 1966.

Vroom, V. H. Work and Motivation. New York: John Wiley and Sons, Inc. 1964.

Young, F. "TORSCA-9, A FORTRAN-IV Program for Nonmetric Multidimensional Scaling.' Behavioral Science, 13: 343-344, 1968.

TABLE 1

JOB TITLES*

1. Demonstrator
2. Sales Clerk
3. Secretary
4. Store Manager
5. Buyer
6. Maintenance Mechanic
7. Jeweler
8. Cabinet Maker
9. Pattern Maker
10. Machinist
11. Plumber
12. Carpenter
13. Actor
14. Dancer
15. Farm Hand
16. Cook
17. Practical Nurse
18. Physician
19. Dentist
20. Lawyer
21. Social Worker
22. Librarian
23. Artist
24. Author
25. Architect
26. Music Teacher
27. Purchasing Agent
28. Automobile Mechanic
29. Chemist
30. Interior Decorator
31. Medical Lab Technician
32. Office Manager
33. Personal Counselor
34. Personnel Manager
35. Radio Operator
36. Surveyor

* Items 1-27 appeared on at least three of the four interest inventories used in the record.

Items 28-30 were used in prior studies by Gonyea.

TABLE 2

STRESS VALUES FOR ONE THROUCH FIVE DIMENSIONS

Dimension	Stress
1	31.9%
2	12.8%
3	6.2%
4	3.8%
5	2.7%

Table 3 Three Dimensional and Four Dimensional Solution

Job Title No.	Three Dimensional			Four Dimensional			
1	.348	-.015	-.056	.352	-.062	-.081	.067
2	.883	-.453	.226	.802	-.527	.212	.063
3	.517	-.367	.010	.432	-.452	.014	.010
4	.925	-.577	.220	.845	-.640	.214	-.004
5	.744	-.342	.185	.678	-.406	.202	.061
6	-.181	.571	.712	-.113	.618	.520	-.407
7	.199	.140	-.135	.196	.086	-.147	.153
8	-.273	.744	.329	-.119	.646	.449	.274
9	-.055	.455	-.216	.031	.327	-.169	.407
10	-.145	.605	.687	-.094	.644	.518	-.358
11	-.216	.620	.403	-.114	.623	.425	.053
12	-.234	.763	.303	-.099	.649	.427	.310
13	.052	.299	-.849	.05	.334	-.795	-.182
14	.090	.262	-.827	.086	.285	-.779	-.185
15	-.010	.374	.177	.016	.392	.149	-.025
16	.074	.396	-.079	.081	.369	-.094	.125
17	-.999	-.896	.050	-1.074	+0.723	.055	-.018
18	-1.005	-.904	.057	-1.08	-.729	.064	-.01
19	-.967	-.864	.031	-1.028	-.690	.041	.016
20	-.061	-.227	-.128	-.117	-.244	-.132	.003
21	.056	-.154	.042	.019	-.160	.034	-.119
22	.145	.084	-.423	.122	.078	-.428	-.159
23	-.078	.375	-.670	-.026	.354	-.665	.075
24	-.002	.175	-.646	-.013	.212	-.611	-.168
25	-.364	.435	-.023	-.198	.371	.076	.409
26	.092	.201	-.606	.085	.241	-.576	-.141
27	.845	-.423	.123	.758	-.502	.111	.100
28	-.165	.619	.728	-.100	.653	.543	-.399
29	-.811	-.649	.050	-.856	-.510	.06	.013
30	-.211	.367	-.282	-.083	.302	-.245	.427
31	-.945	-.828	.077	-1.001	-.658	.09	-.033
32	.797	-.554	.218	.724	-.611	.217	-.06
33	.360	-.349	-.018	.291	-.371	.016	-.182
34	.790	-.586	.150	.204	-.647	.148	-.046
35	.002	.293	.022	-.01	.32	-.019	-.195
36	-.200	.408	.159	-.148	.427	.156	.125

Table 4 Distance Matrix Based on Four Dimensional Solution

	1	2	3	4	5	6	7	8	9	10
1	0.0									
2	0.711	0.0								
3	0.413	0.429	0.0							
4	0.818	0.138	0.496	0.0						
5	0.552	0.174	0.317	0.295	0.0					
6	1.125	1.570	1.369	1.660	1.413	0.0				
7	0.241	0.938	0.626	1.050	0.777	1.066	0.0			
8	1.023	1.525	1.330	1.648	1.360	0.685	0.884	0.0		
9	0.614	1.259	0.979	1.383	1.101	1.115	0.387	0.724	0.0	
10	1.112	1.564	1.367	1.658	1.405	0.058	1.048	0.636	1.083	0.0
11	0.971	1.486	1.275	1.601	1.318	0.469	0.850	0.224	0.767	0.422
12	0.013	1.517	1.325	1.642	1.353	0.723	0.870	0.047	0.697	0.674
13	0.905	1.543	1.206	1.621	1.412	1.374	0.784	1.371	0.859	1.368
14	0.861	1.489	1.153	1.566	1.360	1.375	0.752	1.375	0.852	1.369
15	0.616	1.214	0.951	1.325	1.041	0.594	0.494	0.512	0.540	0.569
16	0.513	1.192	0.907	1.309	1.024	0.872	0.311	0.659	0.299	0.845
17	1.579	1.894	1.531	1.927	1.788	1.757	1.528	1.739	1.598	1.777
18	1.588	1.899	1.538	1.932	1.794	1.765	1.537	1.745	1.605	1.784
19	1.522	1.846	1.480	1.882	1.738	1.720	1.468	1.687	1.534	1.738
20	0.509	1.023	0.605	1.096	0.879	1.156	0.479	1.097	0.715	1.158
21	0.411	0.902	0.523	0.979	0.745	0.971	0.446	0.998	0.745	0.975
22	0.494	1.135	0.775	1.214	0.994	1.144	0.427	1.157	0.677	1.141
23	0.810	1.493	1.151	1.589	1.351	1.309	0.629	1.172	0.600	1.294
24	0.738	1.394	1.031	1.473	1.254	1.230	0.615	1.233	0.736	1.226
25	0.795	1.395	1.113	1.517	1.228	0.965	0.593	0.489	0.339	0.932
26	0.672	1.329	0.986	1.413	1.190	1.206	0.554	1.195	0.690	1.199
27	0.630	0.119	0.355	0.220	0.159	1.561	0.855	1.494	1.178	1.554
28	1.149	1.590	1.396	1.681	1.433	0.044	1.090	0.679	1.131	0.049
29	1.297	1.665	1.290	1.712	1.545	1.488	1.235	1.449	1.302	1.503
30	0.692	1.346	1.037	1.465	1.189	1.175	0.458	0.790	0.141	1.147
31	1.492	1.814	1.451	1.850	1.704	1.656	1.442	1.644	1.516	1.675
32	0.738	0.168	0.396	0.136	0.243	1.557	0.971	1.567	1.314	1.557
33	0.413	0.619	0.252	0.671	0.494	1.202	0.597	1.264	0.967	1.208
34	0.729	0.200	0.365	0.161	0.270	1.593	0.960	1.594	1.306	1.593
35	0.591	1.224	0.914	1.321	1.056	0.660	0.484	0.746	0.622	0.653
36	0.741	1.349	1.070	1.465	1.176	0.673	0.572	0.396	0.477	0.644

	11	12	13	14	15	16	17	18	19	20
11	0.0									
12	0.259	0.0								
13	1.286	1.362	0.0							
14	1.289	1.366	0.062	0.0						
15	0.391	0.518	0.959	0.950	0.0					
16	0.615	0.646	0.766	0.756	0.293	0.0				
17	1.695	1.755	1.768	1.756	1.562	1.602	0.0			
18	1.702	1.760	1.781	1.769	1.570	1.611	0.015	0.0		
19	1.646	1.701	1.717	1.704	1.508	1.543	0.067	0.073	0.0	
20	1.032	1.098	0.913	0.880	0.708	0.656]	1.086	1.096	1.030	0.0
21	0.902	1.003	0.967	0.932	0.571	0.600	1.233	1.242	1.181	0.261
22	1.062	1.152	0.453	0.410	0.679	0.528	1.525	1.536	1.471	0.524
23	1.127	1.157	0.298	0.311	0.822	0.583	1.669	1.680	1.612	0.809
24	1.141	1.227	0.229	0.209	0.795	0.621	1.570	1.583	1.518	0.691
25	0.565	0.469	1.081	1.082	0.490	0.433	1.465	1.471	1.404	0.770
26	1.107	1.187	0.243	0.212	0.753	0.565	1.639	1.651	1.585	0.703
27	1.459	1.484	1.448	1.394	1.168	1.122	1.850	1.856	1.800	0.949
28	0.468	0.718	1.400	1.401	0.614	0.890	1.795	1.803	1.757	1.192
29	1.403	1.463	1.517	1.504	1.258	1.299	0.306	0.314	0.250	0.809
30	0.833	0.766	0.831	0.828	0.614	0.381	1.523	1.531	1.459	0.701
31	1.596	1.660	1.701	1.688	1.463	1.512	0.104	0.112	0.081	1.002
32	1.511	1.564	1.544	1.490	1.229	1.227	1.809	1.815	1.765	0.984
33	1.172	1.266	1.101	1.051	0.836	0.835	1.420	1.428	1.372	0.489
34	1.539	1.590	1.515	1.460	1.246	1.228	1.782	1.788	1.737	0.958
35	0.601	0.755	0.778	0.767	0.251	0.344	1.502	1.512	1.451	0.618
36	0.342	0.399	1.023	1.022	0.226	0.344	1.487	1.494	1.431	0.741

	21	22	23	24	25	26	27	28	29	30
21	0.0									
22	0.532	0.0								
23	0.891	0.457	0.0							
24	0.748	0.264	0.287	0.0						
25	0.781	0.875	0.831	0.930	0.0					
26	0.734	0.224	0.282	0.112	0.908	0.0				
27	0.847	1.048	1.396	1.303	1.332	1.239	0.0			
28	1.005	1.174	1.333	1.239	0.979	1.233	1.582	0.0		
29	0.952	1.253	1.402	1.310	1.169	1.371	1.617	1.525	0.0	
30	0.775	0.685	0.553	0.708	0.348	0.681	1.260	1.194	1.233	0.0
31	1.140	1.445	1.599	1.498	1.379	1.564	1.772	1.694	0.215	1.445
32	0.859	1.124	1.513	1.385	1.434	1.331	0.224	1.580	1.593	1.391
33	0.350	0.654	1.075	0.909	1.069	0.877	0.569	1.234	1.173	1.016
34	0.851	1.099	1.487	1.358	1.436	1.306	0.216	1.617	1.569	1.378
35	0.490	0.495	0.701	0.602	0.642	0.573	1.171	0.690	1.206	0.666
36	0.669	0.786	0.835	0.860	0.304	0.634	1.299	0.691	1.184	0.521

	31	32	33	34	35
31	0.0				
32	1.731	0.0			
33	1.334	0.548	0.0		
34	1.706	0.082	0.532	0.0	
35	1.406	1.217	0.755	1.223	0.0
36	1.391	1.370	0.971	1.382	6.405

TABLE 5

JOB CLUSTERS AND ASSOCIATED JOB TITLES

Job Cluster	Job Number	Job Titles
I HEALTH RELATED	17 18 19 29 31	Practical Nurse Physician Dentist Chemist Medical Lab Technician
II BUSINESS DISTRIBUTION	2 4 5 27 32 34	Sales Clerk Store Manager Buyer Purchasing Agent Office Manager Personnel Manager
III BUSINESS OFFICE	3 5 27 32 34	Secretary Buyer Purchasing Agent Office Manager Personnel Manager
IV MECHANICAL	6 10 28	Maintenance Mechanic Machinist Automobile Mechanic
V BUILDING TRADE	8 11 12	Cabinet Maker Plumber Carpenter
VI APPLIED ART I	9 16 30	Pattern Maker Cook Interior Decorator
VII APPLIED ART II	7 9 16	Jeweler Pattern Maker Cook

TABLE 5 (Continued)

Job Cluster	Job Number	Job Titles
VIII APPLIED ART III	9 25 30	Pattern Maker Architect Interior Decorator
IX CREATIVE ART	13 14 23 24 26	Actor Dancer Artist Author Music Teacher
X LITERARY ART	22 24 26	Librarian Author Music Teacher
XI X 1	15 16 35	Farm Hand Cook Radio Operator
XII X 2	15 16 36	Farm Hand Cook Surveyor
NONCLUSTERED	1 20 21 33	Demonstrator Lawyer Social Worker Personal Counselor